



SYNOPSIS OF “THE POWER OF FEEDBACK”

INTRODUCTION

Feedback, defined as information about one’s performance given by an agent (including teachers, peers, books, computers, parents, etc.), is an integral aspect of instruction and learning. Hattie and Timperley synthesized the results of 12 previous meta-analyses (of 196 studies) that included feedback as an instructional strategy. They found that the average effect size (ES)* for feedback was 0.79, making feedback one of the top five effective instructional methods. Feedback was found to have a more powerful effect on achievement than students’ prior ability (ES=0.71), socioeconomic status (ES=0.44), and homework (0.41). It ranked close to reciprocal teaching (ES=0.86) in effectiveness, and somewhat below direct (explicit) instruction (ES=0.93).

Given the strength of its effect, examining feedback’s specific impact on achievement and how to maximize that impact is important for strengthening instruction for all students and providing effective intervention for those who need it. In their synthesis, Hattie and Timperley discuss the differential effect of feedback based on who provided it, the type of feedback provided, and when and how it was provided. This synopsis describes their results and suggests applications in the context of overall classroom instruction and interventions with students who are struggling or who have learning disabilities.

*An effect size quantifies the strength of an intervention’s effectiveness by calculating the magnitude of the difference between the intervention group and the comparison group. Generally, an effect size of 0.20 is considered small, 0.50 moderate, and 0.80 large.

METHOD & RESULTS

Hattie and Timperley provide primarily a narrative synthesis of the results of the 12 previously reported meta-analyses addressing the effect of feedback on measures of achievement. While the average effect of feedback was high, they found great variability within and across the 12 meta-analyses: Average effects ranged from 0.12 for an analysis of research on teacher praise to 1.24 for an analysis of research on the effects of feedback for special education students. Table 1 lists the 12 meta-analyses that served as the database for the Hattie and Timperley analysis, their context, and the average effect sizes.

The meta-analyses with the largest number of studies, Kluger and DeNisi (1996), was especially rigorous in its inclusion criteria, requiring that a study include a comparison group, at least 10 participants, and that the feedback intervention be provided in a way that was not confounded with other instructional variables under investigation. The 131 studies that met their criteria had an average overall effect of 0.37, although the effect sizes were widely dispersed, with nearly one-third reporting negative effects. This considerable variability in the research findings suggests that feedback has positive effects in some contexts and implementations but not others.

Because of the high level of variation found in the effects of feedback, Hattie and Timperley focused on determining the implications of the patterns in the effects that appeared across the meta-analyses and created a model of the way in which the effectiveness of feedback can be optimized. They did not perform a formal meta-analysis on the effect sizes from the 12 meta-analyses they examined, but rather proposed a model to identify the circumstances under which feedback has the greatest impact. Within this model, the function of feedback is to close the gap between a student’s current level of achievement and the desired level or goal and to address three questions: Where am I going? (goals); How am I going? (progress toward goals); and Where to next? (what must be done to enhance progress toward goals). In responding to the three questions, feedback may be directed at one of four levels: the task, the processing of the task, self-regulation, and the student as an individual.

Hattie and Timperley’s research indicates that task-level feedback is very effective. Such feedback gives students information on their level of performance on a task and includes, for example,

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informing a student if an answer is correct or incorrect, if the student's behavior is acceptable or unacceptable, if the student's understanding is accurate or flawed, and if the student's interpretation is right or wrong. The best task-level feedback corrects flawed interpretations rather than a lack of knowledge and helps students focus on using strategies to achieve their learning goals.

Feedback at the processing level is particularly effective for facilitating depth in learning. This type of feedback often entails encouraging students' use of strategies to check their work, recognize errors, and self-correct. Processing-level feedback also helps students learn to use strategies and cues effectively.

The third level of feedback, self-regulation, is aimed at helping students internalize the practice of self-monitoring their learning and work, providing internal feedback rather than relying on feedback from others. Feedback about self-regulation also helps students integrate external feedback to guide how they engage in future learning situations and helps students learn when they need to ask for assistance to continue meeting their goals. This level of feedback also helps students attribute their success or failure at a task to a particular and specific cause rather than to their self-efficacy. The most effective feedback helps students make the connection between effort and success.

Hattie and Timperley's research indicates that the least effective type of instructional feedback concerns the student's self as a person. This type of feedback is generally a global statement about the student, ("good girl," "great try," etc.) rather than the student's performance on a task. Feedback at the self level must improve the student's investment of effort or attitude toward learning in order to make an impact. However, this type of feedback usually has little instruction-related content and therefore fails to affect achievement. In particular, praising students has been shown to have little to no effect.

In addition to the four levels of feedback, Hattie and Timperley also address four issues related to feedback: timing, frequency of types of feedback in the classroom, positive vs. negative feedback, and assessment as a means of feedback.

With respect to timing, the meta-analyses they synthesized indicated that when feedback is aimed at the task level, some delay is useful. However, feedback aimed at the process level should be provided immediately. Studies that examined the type of feedback provided in classrooms have found that most feedback is directed at the self and task levels. Research indicates that negative as well as positive feedback can be effective, depending on the level at which it is directed. While both demonstrate effectiveness at the task level, at the self level, negative feedback has demonstrated greater effectiveness than positive feedback.

Effects of positive and negative feedback at the level of self-regulation are mixed. Positive feedback may enhance motivation when a student is committed to a goal, and may lead to task persistence. A student's sense of efficacy also interacts with the effect of positive and negative feedback. Negative feedback appears to harm the motivation and achievement of students with low self-efficacy. On the issue of assessment as feedback, Hattie and Timperley highlight the need for assessment that provides feedback at the task, process, and self-regulation levels. However, assessment is seldom implemented in this manner.





IMPLICATIONS FOR PRACTICE

Although one of the 12 meta-analyses in Hattie and Timperley's synthesis focused on the effectiveness of feedback for special education students, it is not possible to disaggregate the results of that analysis to determine precisely how their findings apply to struggling students. Nevertheless, this body of research has implications for those who instruct struggling learners and seek to provide them with feedback in the most effective way possible.

In a response to intervention (RTI) framework, progress monitoring is one means of providing instructional feedback to students and teachers. Regular use of progress monitoring measures gives students and teachers a clear view of the student's goal and how he or she is doing in reaching that goal. This feedback addresses the three questions that Hattie and Timperley set forth as critical to providing effective feedback (Where am I going? [goals]; How am I going? [progress toward goals]; and Where to next? [what must be done to enhance progress toward goals]).

Measures that provide an aim line showing the gap between a student's current level of achievement and the goal illustrate effective feedback at both the task and process level, and integrate the three key feedback questions. Hattie and Timperley's findings also speak to

how progress monitoring data might be most effectively shared with students: with a clear focus on the three questions and on the task, process, and self-regulation levels of feedback.

Hattie and Timperley's findings related to providing negative feedback are especially relevant for those instructing struggling students. Research indicates that when students with a low sense of efficacy receive negative feedback at the self-regulation level, their motivation is negatively affected. Because struggling students are often the ones who receive the most negative feedback, adequate supports are needed to buffer the negative effect that such feedback can have on student motivation.

Hattie and Timperley's findings on the process and self-regulation levels of feedback highlight important issues to consider in implementing interventions. At both the process and self-regulation levels, the goal of feedback is to advance students' ability to use strategies to monitor their work, self-correct, know when and how to use strategies, and determine when to ask for help. Given that many effective interventions aim to teach strategies to low-achieving students, attention should be paid to how feedback is provided in the context of these interventions.

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Table 1. Summary of effect sizes from 12 meta-analyses assessing the influence of feedback.

Study	Context	Number of effects	Effect size
Skiba, Casey, and Center (1985-1986)	For special education students	35	1.24
Lysakowski and Walberg (1982)	Cues, corrective feedback	54	1.13
Walberg (1982)	Cues, motivational influences, and reinforcement	19	0.81
Tenenbaum and Goldring (1989)	Cues, participation, reinforcement, feedback, and correctives	15	0.74
Rummel and Feinberg (1988)	Extrinsic feedback rewards	45	0.60
Yeany and Miller (1983)	Diagnostic feedback in science	49	0.52
Kluger and DeNisi (1996)	Feedback	470	0.38
L'Hommedieu, Menges, and Brinko (1990)	From student ratings	28	0.34
Moin (1986)	Feedback	NR	0.29
Bangert-Drowns, Kulik, Kulik, and Morgan (1991)	From testing	40	0.28
Kulik and Kulik (1988)	Immediate versus delayed	53	0.28
Getsie, Langer, and Glass (1985)	Rewards and punishment	89	0.14
Wilkinson (1981)	Teacher praise	14	0.12

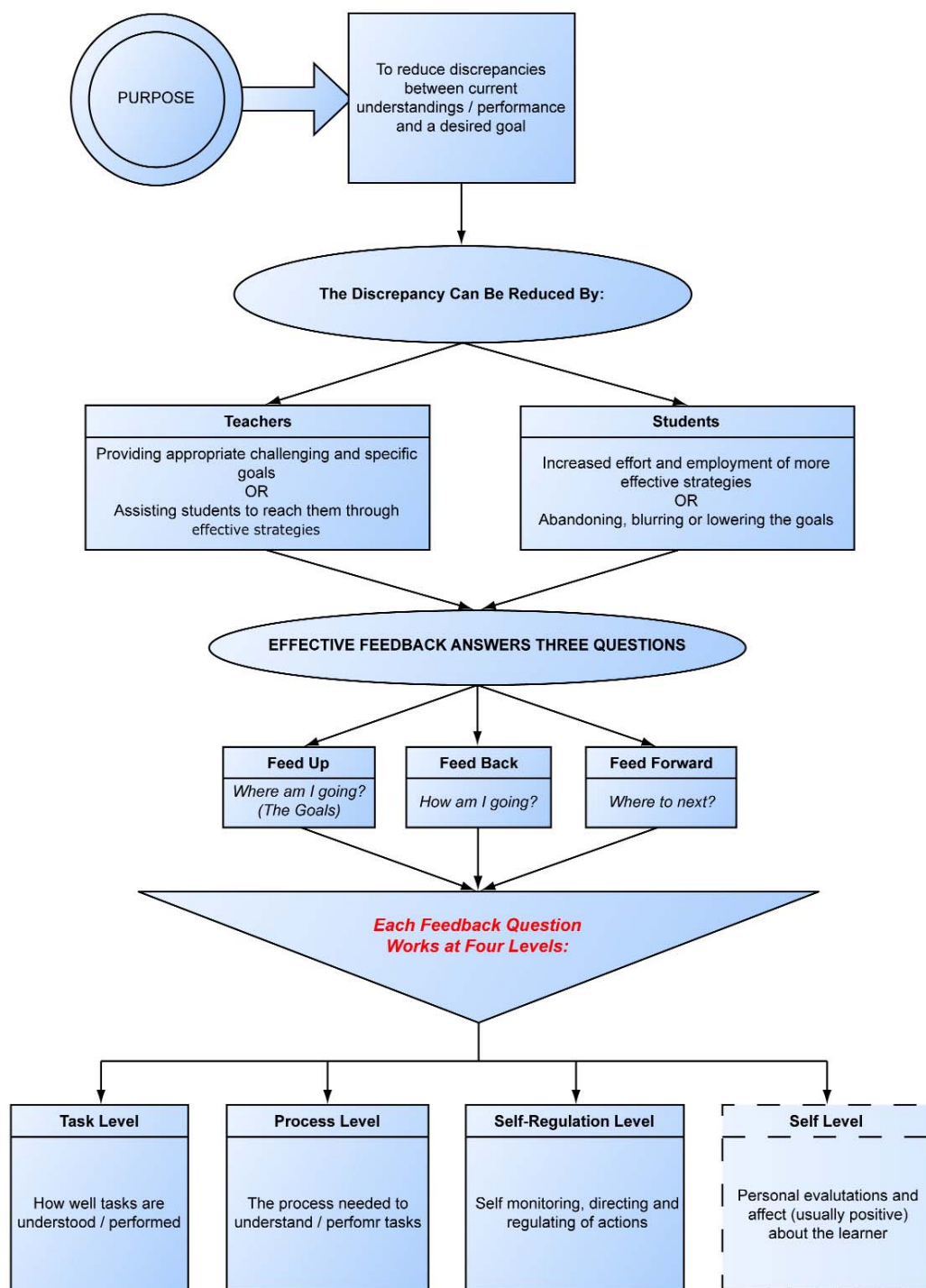


IMPLICATIONS FOR PRACTICE

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Feedback should be provided at the process and self-regulation levels to optimize students' ability to internalize the strategies and learn to implement them appropriately.

The research on feedback that Hattie and Timperley synthesized makes a valuable contribution to the work of improving instruction for all students and to implementing effective interventions for low-achieving students and those with learning disabilities. More specific attention to the optimal means of providing feedback to these students is needed to determine exactly how feedback can be most effective in remediating achievement deficits. However, one critical advantage of the Hattie and Timperley synthesis is that the findings can be implemented across academic areas (e.g., reading, math, other content areas) and across curricula. Teachers who implement these findings, regardless of the other instructional elements they are using, are more likely to achieve improved outcomes with their students.



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